



UNITED STATES PATENT AND TRADEMARK OFFICE

[Handwritten signature]

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/072,746	02/08/2002	Kazuhiko Morimoto	Saigoh C289	3006

7590 10/04/2004
 FLYNN, THIEL, BOUTELL & TANIS, P.C.
 2026 Rambling Road
 Kalamazoo, MI 49008-1699

EXAMINER SHIN, MARC L

ART UNIT 2836	PAPER NUMBER
------------------	--------------

DATE MAILED: 10/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/072,746	Applicant(s) MORIMOTO ET AL.	
	Examiner Marc L Shin	Art Unit 2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 30 September 2002.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 9-11 is/are allowed.
- 6) Claim(s) 1-8 and 12-20 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/8/2002</u> . | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 112

1. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The examiner is unclear as to what the applicant means by the limitation "when said engine is restarted after deceleration of said vehicle and vehicle stoppage."

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 12 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Scott (5,125,469) in view of Furutani et al (5,285,862).

Regarding claims 1 and 12, Scott discloses:

- a system for storing deceleration energy from a motor vehicle and for using the stored deceleration energy to assist in accelerating the motor vehicle (see Abstract)

- a detector/switch for determining whether the motor vehicle is decelerating (see Abstract)
- a switching means for connecting the generator to the storage element when the vehicle is decelerating (col 5, lines 59-66).

Scott does not disclose a first and second power supply. Furutani et al teaches a main battery (10) and an auxiliary battery (22) used in a hybrid vehicle (see Fig 1). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the storage system of Scott to include first and second batteries, as taught by Furutani et al. The motivation would have been to the motor with high capacity current and a low capacity current.

Regarding claim 2, Scott discloses that engine (13) includes a crankshaft (16) which is coupled through a belt (17) to the drive shaft (19) of an alternator (21) (see col 4, lines 25-27).

Regarding claim 3, Furutani et al discloses that the power capacitor (34) is connected to a starting motor (24) which is mainly driven by electric current supplied from the power capacitor (34), a rotational shaft of the starting motor (24) is drivingly connected to an engine (26) for starting, the engine (26) is linked through a speed reducer (28) to an electric generator (3) so that the rotation of engine (26) can cause electric power within the generator (30) (col 3, lines 44-51).

Regarding claim 5, Furutani et al discloses a power capacitor (34) is connected to a starting motor (24) which is mainly driven by electric current supplied from the power capacitor (34) (col 3, lines 44-46).

Regarding claim 6, Furutani et al discloses that the main battery is a 12 V battery and the sub-battery is a capacitor (col 3, lines 37-44).

Claim 7 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Scott, Furutani et al, and Masberg et al (6,202,776 B1). Scott and Furutani et al disclose a power generating and control system for a vehicle having an engine and a generator driven by engine, as discussed in claim 1 above. Scott and Furutani et al do not disclose an automatic stop/startup system. Masberg et al teaches a drive system, especially for a motor vehicle, with a drive assembly, especially an internal combustion engine; an electric machine that is directly coupled or can be coupled to the drive shaft of the drive assembly, being designed such that it can start the drive assembly by merging in from standstill; and an automatic start-stop control of the drive assembly (see Abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the power generating and control system of Scott and Furutani et al with the automatic stop/startup system, as taught by Masberg et al. The motivation would have been to reduce the fuel consumption of the vehicle when the vehicle is stopped at a traffic light.

Claim 13 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Scott, Furutani et al, and Kuroda et al (6,504,259 B1). Scott and Furutani et al disclose a power generating and control system for a vehicle, as discussed in claim 12 above. Scott and Furutani et al do not disclose that the fuel is cut to the engine during deceleration of the vehicle. Kuroda et al teaches an engine automatic start stop control apparatus that performs a fuel stop control to the engine (10) during deceleration, called a fuel cut (col 16, lines 40-44).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the power generating and control system of Scott and Furutani et al to include an engine automatic start stop control apparatus that performs a fuel stop control to the engine during deceleration, as taught by Kuroda et al. The motivation would have been to improve fuel efficiency of the vehicle.

Claim 14 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Scott, Furutani et al, and Boll et al (5,788,597). Scott and Furutani et al disclose a power generating and control system for a vehicle, as discussed in claim 12 above. Scott and Furutani et al do not disclose that the alternator continues to apply charge to the battery after the vehicle decelerates and stops. Boll et al teaches a hybrid vehicle charge system in which employs a continuous charging operation (col 3, lines 19-21).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the power generating and control system of Scott and Furutani et al.

to include a continuous charging operation, as taught by Boll et al. The motivation would have been to allow the sub-battery to fully charge for the purpose of powering the entire vehicle, in the event that the main battery becomes dead.

Claim 15 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Scott, Furutani et al, Boll et al, and Origuchi et al (5,212,431). Scott, Furutani et al, and Boll et al disclose a power generating and control system, as discussed in claim 14 above. Scott, Furutani et al, and Boll et al do not disclose that the alternator stops charging the sub battery when a voltage of sub battery is greater than a predetermined value. Origuchi et al teaches an electric vehicle driven by a motor provided with a secondary battery and a generator which are controlled by a controller so that when an amount of charge of the secondary battery becomes higher than a predetermined value the generator is put from the operating state into the stopping state (see Abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the power generating and control system of Scott, Furutani et al, and Boll et al to include the controller to stop charging the secondary battery when the voltage is greater than a predetermined value, as taught by Origuchi et al. The motivation would have been to shorten the operating period of the generator during a vehicle running condition in order to reduce the generation of noise and exhaust gasses produced by the generator.

Claims 16-18 are rejected under Scott, Furutani et al, and Ng et al (6,320,351 B1). Scott and Furutani et al disclose a power generating and control system, as discussed in claim 12 above.

Regarding claim 16, Scott and Furutani et al do not disclose that when the engine stops and alternator stops, the sub battery provides power to electrical load and maintains the voltage of main battery. Ng et al teaches that when the vehicle stops, an auxiliary battery provides power to electrical loads and maintains the voltage of a main battery (col 1, lines 50 –66). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the power generating and control system of Scott and Furutani et al to include a secondary battery to provide power to electrical loads and maintain voltage of a main battery, as taught by Ng et al. The motivation would have been to preserve the voltage on the main battery for the purposes of starting the vehicle.

Regarding claim 17, Ng et al teaches that the auxiliary battery restarts the vehicle and the alternator remains off during subsequent vehicle acceleration until the auxiliary battery voltage is less than power consumption of the vehicle load (col 1, lines 15-38).

Regarding claim 18, Ng et al teaches that when the vehicle is started with the predetermined condition that the voltage of the auxiliary battery is less than a predetermined voltage, the alternator charges the main battery and auxiliary battery, and when the vehicle is in normal operation the auxiliary battery is disconnected from the alternator and main battery (col 1, lines 15 –40, col 2, lines 1-40).

Claims 19 and 20 are rejected under Scott, Furutani et al, and Bassanini et al (6,349,545 B1). Scott and Furutani et al disclose a power generating and control system, as discussed in claim 12 above.

Regarding claim 19, Scott and Furutani et al do not disclose that when the sub battery is fully charged and engine is turned off, the alternator is disconnected and sub-battery supplies power to an electrical load of the vehicle. Bassanini et al teaches that in an operating condition when the sub battery is fully charged and engine is turned off, the alternator is disconnected and sub battery supplies power to an electrical load (col 1, lines 20-50).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the power generating and control system of Scott and Furutani et al to include the disconnection of the alternator and sub battery supplying power to an electrical load of the vehicle when the engine is turned off, as taught by Bassanini et al. The motivation would have been to limit the use of the alternator in order to preserve fuel of the vehicle.

Regarding claim 20, Bassanini et al teaches that the vehicle is a non-hybrid self-propelled vehicle (col 1, line 12).

Allowable Subject Matter

Claims 9, 10, and 11 are allowed.

The following is the examiner's statement of reasons for allowance:

Claim 9 is allowed because the feature of a switching arrangement preventing the generator from generating power when a charge quantity of second power supply is greater than a predetermined value, in the combination as claimed is not disclosed in prior art of record.

Claim 10 is allowed because the feature of a switching arrangement controlling the first and second switch sections so that the generator and second power supply are not connected when first and second power supplies are connected, in the combination as claimed is not disclosed in the prior art of record.

Claim 11 is allowed because the feature of the main battery connected in every operating state to receive power from the generator and in other operating states to receive power from or send power to generator, in the combination as claimed is not disclosed in the prior art of record.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc L Shin whose telephone number is 571-272-2267. The examiner can normally be reached on M - F 8AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2800 ext 36. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Marc L Shin
Examiner
Art Unit 2836

Stephen W. Jackson
9-30-04

STEPHEN W. JACKSON
PRIMARY EXAMINER